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F/AKC3:JLS

MEMORANDUM FOR: The record

FROM: John Sease

SUBJECT: Steller Sea Lion Survey Results, June and July 2002

The National Marine Mammal Laboratory (NMML - Alaska Fisheries Science Center) and the Southwest Fisheries Science Center (SWFSC) conducted surveys of Steller sea lions across Alaska during June and July 2002. The NMML aerial survey of non-pups took place 14 to 25 June, covering the Alaska portion of the western stock from the eastern Gulf of Alaska through the western Aleutian Islands (Figure 1). Aerial survey counts, made from 35-mm oblique photographs, include all adult and juvenile sea lions, animals 1 or more years old, that are on rookeries and haul-out sites. The NMML counted pups at 21 western stock rookeries during two simultaneous ship-based expeditions from 24 June to 10 July. One vessel surveyed the Aleutian Islands (Attu to Dutch Harbor), the second vessel surveyed the Gulf of Alaska (Dutch Harbor to Prince William Sound). Land-based field parties counted pups at three other rookeries (Fish I., Marmot I., and Ugamak I.). The NMML did not count pups at seven rookeries in 2002, instead using counts from June and July 2001 to create a composite 2001/2002 pup count. These rookeries were not recounted in 2002 to avoid additional disturbance. The SWFSC surveyed Steller sea lions from the eastern stock in Southeast Alaska, counting both pups and non-pups from medium-format (5-inch) vertical photographs. At the time of this memorandum, results for Southeast Alaska were preliminary.

Most population analyses for Steller sea lions focus on counts of non-pups (adults and juveniles) at "trend sites." Trend sites are those rookeries and haul-out sites with comparable series of counts from the 1970s to the present, thus allowing analysis of population trends on a decadal scale. Trend sites include the majority of animals (70-75%) observed in each survey.



WESTERN STOCK

Non-pups: Numbers of adult and juvenile sea lions at the 84 western-stock rookery and haul-out trend sites in Alaska increased by 5.5% from 2000 to 2002. This was the first region-wide increase observed during more than two decades of surveys. Despite this increase, however, the 2002 count was still down 5% from 1998 and 34% from 1991 (Table 1, Figure 2). The average, long-term trend was a decline of 4.2% per year from 1991 to 2002. Trends were similar in the Kenai-to-Kiska subarea (four regions from the central Gulf of Alaska through the central Aleutian Islands), another geographical region used as a population index (Table 1, Figure 2). Counts at the 70 Kenai-to-Kiska trend sites increased by 4.8% from 2000 to 2002 but decreased by 26% from 1991 to 2002. The long-term trend across the Kenai-to-Kiska region was a decline of 3.1% per year from 1991 to 2002.

Although numbers of non-pups increased in five of the six western-stock sub-regions from 2000 to 2002 (Table 1, Figure 3), these changes involved only a few hundred animals. The region that continued to decline was the western Aleutian Islands, where numbers decreased by 24% from 2000 to 2002 following a 44% decline from 1998 to 2000. The overall decline in the western Aleutian Islands was 75% from 1991 to 2002.

Pups: Pups counts introduce disturbance to the rookeries and are logistically difficult to conduct. Consequently, complete pup counts are attempted only every four years, with counts at selected rookeries during intervening years. The composite 2001/2002 pup count for the western-stock, which included counts from 24 rookeries in 2002 and seven in 2001, showed continuing decline in pup production (Table 2, Figure 4). For the Kenai-to-Kiska index area, the area with longest series of region-wide counts, pup numbers were down 7.8% from 1998, 24.5% from 1994, and 42.4% from 1990/1991. Pup counts increased in one region (western Gulf of Alaska: +5.5%) from 1998 to 2002, but declined in the five other regions. The western Aleutian Islands experienced the worst decline (39%) from 1998 to 2002.

EASTERN STOCK

Non-pups: As noted above, count results for the 10 trend sites in Southeast Alaska are preliminary, but they suggest no change in the long-term trends for this region (Table 1, Figures 2 and 3). Non-pup numbers have increased by approximately 2% per year over the last decade for Southeast Alaska.

Pups: Pups in Southeast Alaska were counted from medium-format vertical photographs. Preliminary results suggest that numbers of pups in Southeast Alaska increased by about 11% from 1998 to 2002. (Table 2, Figure 4). This is consistent with an average rate of about 3% per year observed over the last decade.

Table 1.--Regional counts of adult and juvenile (non-pup) Steller sea lions observed at rookery and haul-out trend sites in Alaska during June and July aerial surveys from 1991 to 2002, including overall percent change since 1991 and 2000 and estimated annual rates of change from 1991 to 2002.

Year	Southeast Alaska (n=10)	Gulf of Alaska			Aleutian Islands			Kenai to Kiska (n=70)	Western stock (n=84)
		Eastern (n=10)	Central (n=15)	Western (n=9)	Eastern (n=11)	Central (n=35)	Western (n=4)		
1991	8,621	4596	6270	3732	4228	7496	3083	21726	29405
1992	7,555	3738	5739	3716	4839	6398	2869	20692	27299
1994	9,001	3365	4516	3981	4419	5820	2035	18736	24136
1996	8,231	2132	3913	3739	4715	5524	2187	17891	22210
1998	8,693	2,110 ¹	3467	3360	3841	5749	1911	16417	20,438 ¹
2000	9,862	1,975	3,180	2,840	3,840	5,419	1,071	15,279	18,325
2002	9,951 ²	2,500	3,366	3,221	3,953	5,480	817	16,020	19,337
% change 1991 to 2002	+ 15.4	- 45.6	- 46.3	- 13.7	- 6.5	- 26.9	- 73.5	- 26.26	- 34.24
% change 2000 to 2002	+ 0.9	+ 26.6	+ 5.8	+ 13.4	+ 2.9	+ 1.1	- 23.7	+ 4.85	+ 5.52
est. annual % change 1991 to 2002	+ 1.8	- 7.0	- 6.3	- 2.2	- 1.6	- 2.3	- 11.4	- 3.09	- 4.15

¹ 1999 counts substituted for sites in the eastern Gulf of Alaska not surveyed in 1998.

² 2002 counts for Southeast Alaska are preliminary.

Table 2.--Regional counts of Steller sea lion pups at rookeries in Alaska from 1990/1991 to 2002, including overall percent change from earlier years and estimated annual rates of change from 1991 to 2001/2002. The composite count for 2001/2002 includes pup counts from 7 rookeries in 2001.

Count year(s)	Southeast Alaska (n=3)	Gulf of Alaska			Aleutian Islands			Kenai to Kiska (n=25)
		Eastern (n=2)	Central (n=5)	Western (n=4)	Eastern ¹ (n=5)	Central ² (n=11)	Western (n=4)	
1990/1991	3600		4801	1857	2075	3568		12301
1994	3770	903	2831	1662	1776	3109		9378
1996	3714	584						
1997	4160	610					979	
1998	4234	689	1876	1493	1474	2834	803	7677
2001/2002	4706	570	1543	1575	1385	2577	488	7080
Percent change								
1990 to 2001/2002	+30.7		-67.9%	-15.2%	-33.3%	-27.8%		-42.4%
1994 to 2001/2002	+24.8	-36.9%	-45.5%	-5.2%	-22.0%	-17.1%		-24.5%
1998 to 2001/2002	+11.1	-17.3%	-17.8%	-5.5%	-6.0%	-9.1%	-39.2%	-7.8%
est. annual % change 1994 to 2002	+3.3	-4.7	-8.1	-0.8	-3.3	-2.5	-15.1	-3.8

¹ Does not include Sea Lion Rocks (Amak) or Ogchul.

² Does not include Semisopochnoi, Amchitka-East Cape, or Amlia-Sviechnikof Harbor.

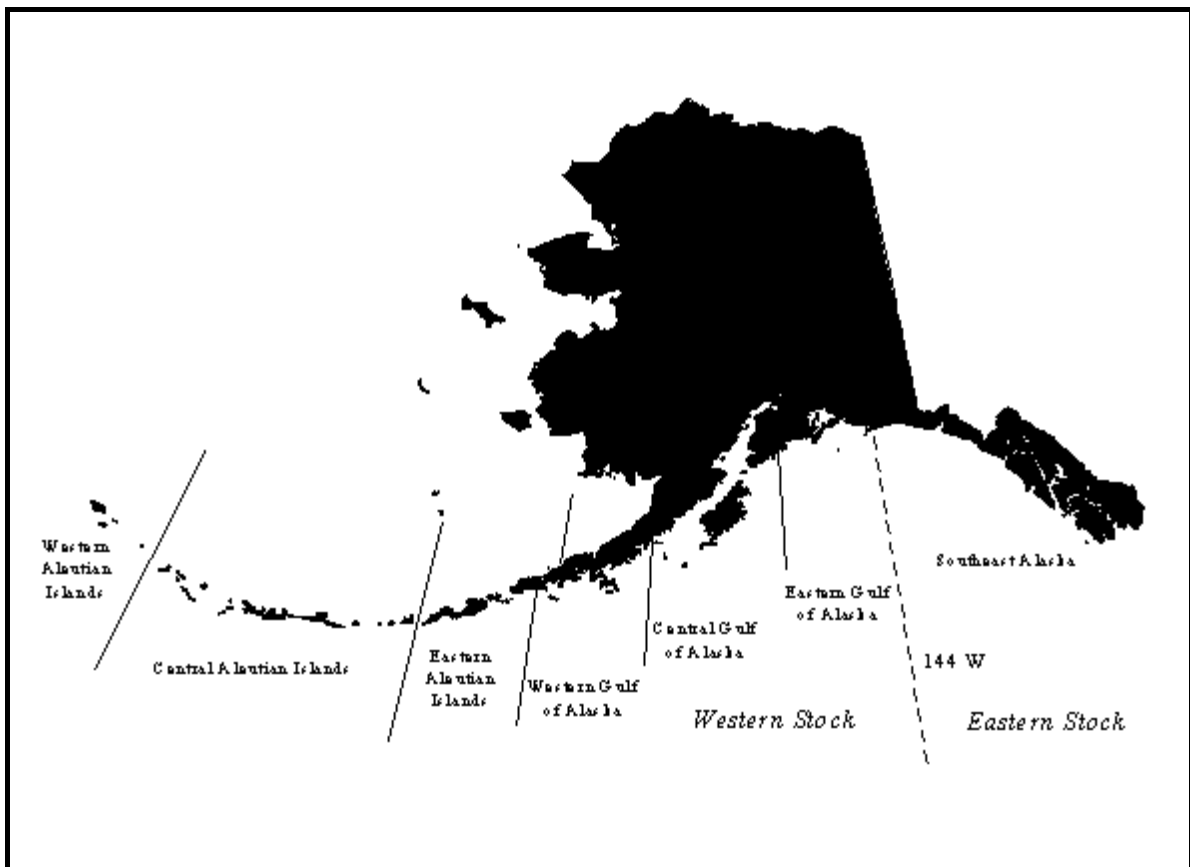


Figure 1.--Geographical regions of Alaska employed for presentation of survey results, including delineation between eastern and western stocks at 144° W Long.

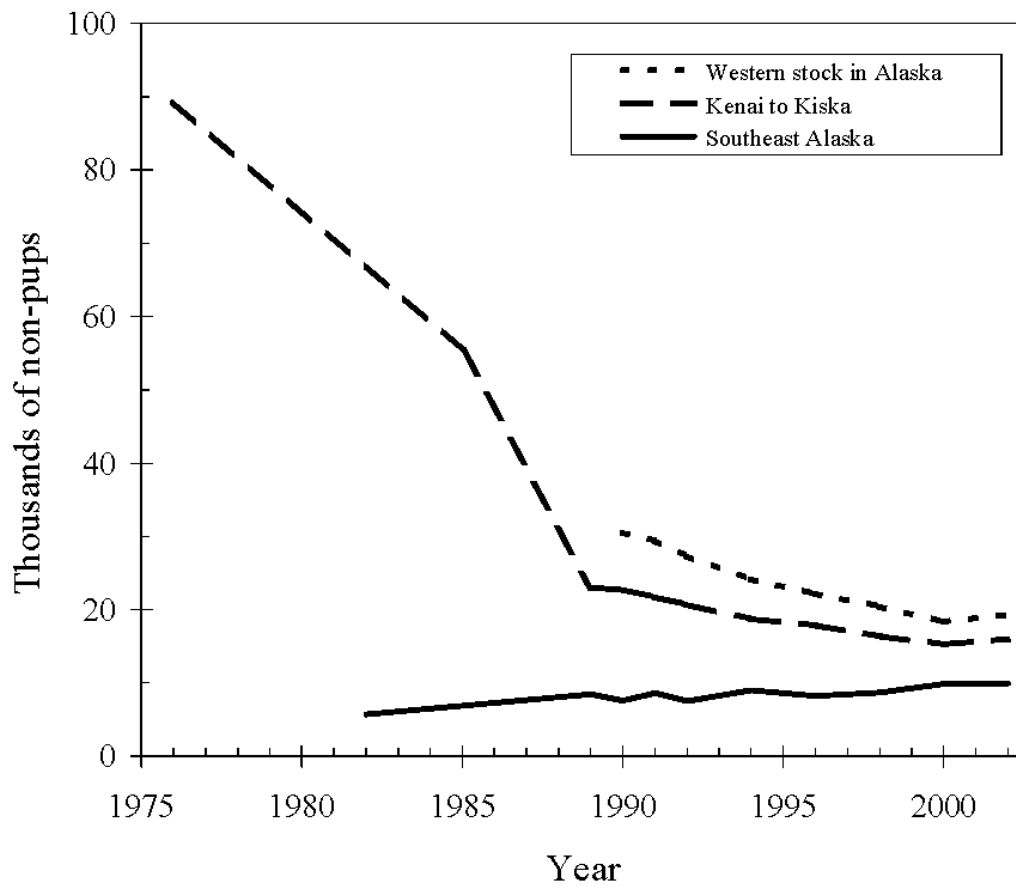


Figure 2.--Numbers of non-pup (adult and juvenile) Steller sea lions on trend sites in the western stock in Alaska, in the Kenai-to-Kiska index area, and in Southeast Alaska (eastern stock) from June aerial surveys, 1970s to 2002.

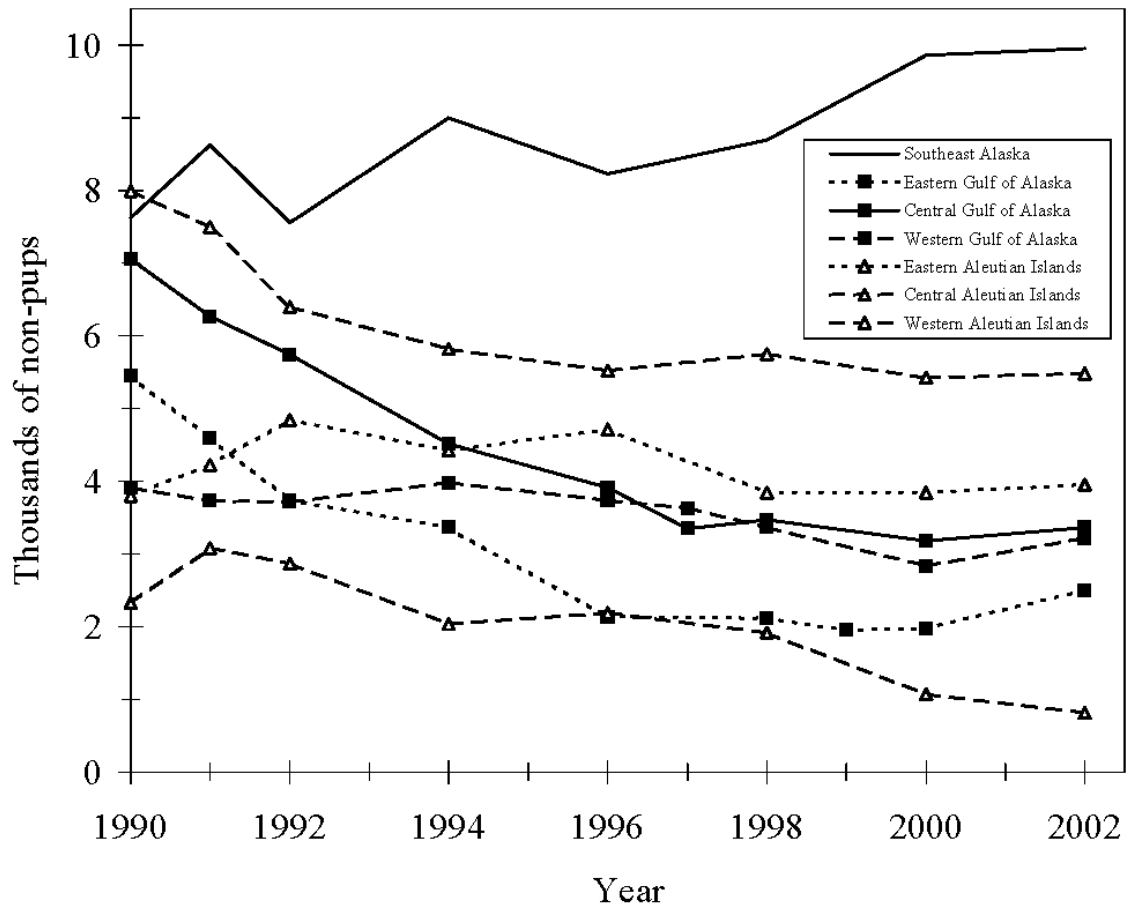


Figure 3.--Numbers of non-pup (adult and juvenile) Steller sea lions on trend sites in seven sub-regions of Alaska from June aerial surveys, 1991 to 2002. Southeast Alaska in part of the eastern stock, the other regions are part of the western Stock.

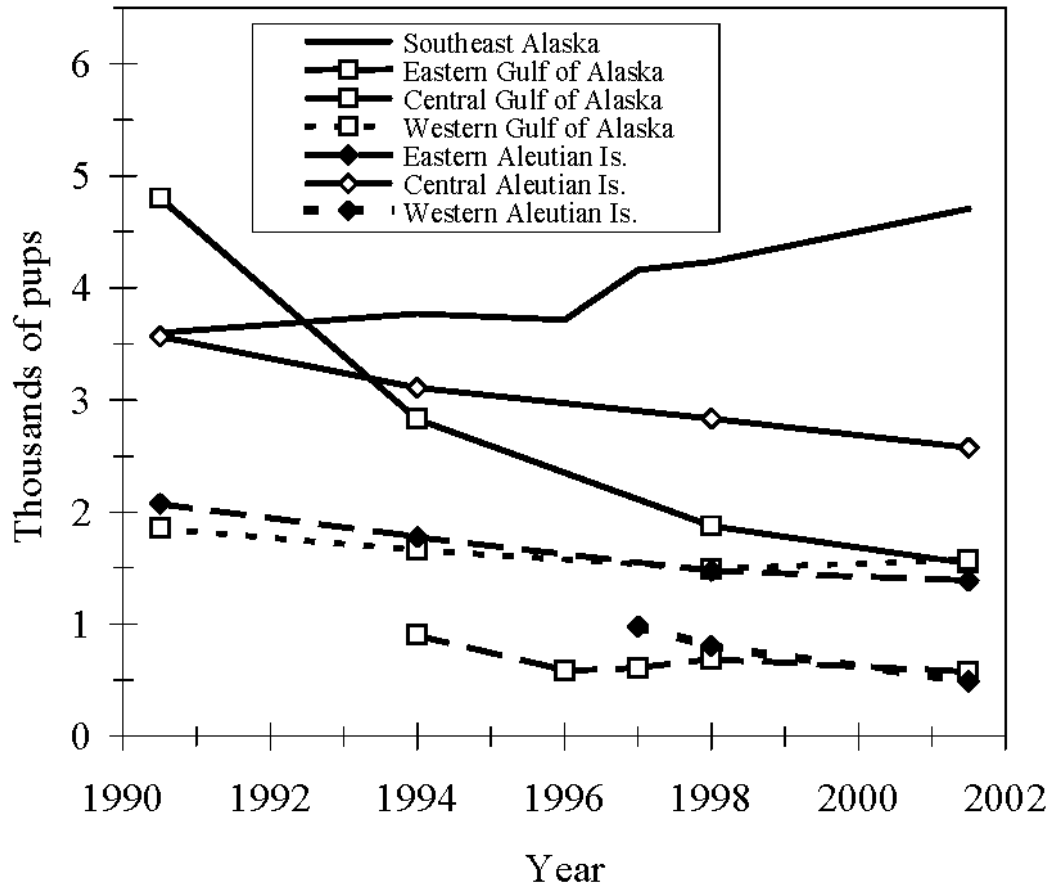


Figure 4.--Numbers of Steller sea lion pups at rookeries in seven subareas of Alaska from 1990 to 2001/2002. Southeast Alaska in part of the eastern stock, the other six regions are part of the western Stock.